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ABSTRACT

A pilot project involving implementation and evaluation of the 4MAT curriculum system at secondary schools in Scarborough and North York (Ontario) is described. The 4MAT system is a curriculum delivery model developed by B. McCarthy that incorporates research by D. Kolb in the fields of learning styles and brain dominance. The model identifies four dominant learning styles, each assumed to be present in approximately 25% of the population. The model is graphically displayed as four quadrants with the axes representing two major functions that determine how each individual learns; specifically, the axes represent means of perceiving information (sensing and feeling versus thinking) and means of processing information (doing versus watching). The research performed for this study was designed to determine the effects of the 4MAT system on teachers' attitudes about differences in students' learning styles and students' and teachers' perceptions of the efficacy of the system. A total of 14 units of study based on the 4MAT model were developed, and six were retained for use in this study. Teacher and student questionnaires and teacher follow-up interviews were used upon completion of the unit to determine curriculum effects on 31 teachers and 572 students involved in the study. Results indicate that the system was received well by both students and teachers. The 4MAT Research Project Teacher Interview Schedule, Teacher Survey, and Student Survey are included; and summaries of the responses are provided. (TJH)

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IMPACT OF THE 4MAT SYSTEM

AS A CURRICULUM DELIVERY MODEL

Sandra Sangster
North York Board of Education

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Scarborough Board of Education

November, 1988

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INTRODUCTION

What is 4MAT?

The 4MAT system is a curriculum delivery model developed by Bernice McCarthy which incorporates research by David Kolb in the fields of learning styles and brain dominance (McCarthy, 1986). Her model identifies four dominant learning styles, each assumed to be present in approximately 25 per cent of the population. The model is graphically displayed as four quadrants with the axes representing two major functions which determine how each individual learns. Specifically, it shows:

- how we **perceive** information (sensing/feeling vs thinking)
- how we **process** that information (doing vs watching).

The model has implications in a school setting in that appropriate teaching methods have been identified for each style. Use of the 4MAT system does not necessarily require the identification of each participant's learning style, but rather it encourages the teacher to employ techniques appropriate to each of the four styles. The intent is that by progressing through each style sequentially - experience, reflection, conceptualization, application and experimentation - each student can excel in his/her "preferred" quadrant some of the time. The 4MAT system also allows students to experience and assimilate other learning styles.

In addition, techniques addressing preferences of brain hemisphere dominance (left mode-sequential versus right mode-global) are applied to each quadrant. The end result is a cyclical teaching approach which serves all learning styles using both left and right mode activities. The purpose of the 4MAT system approach is to raise teacher awareness of the different learning styles that exist in each classroom and to implement 4MAT as a practical curriculum delivery model for improving the learning environment.

Background

After attending workshops about the 4MAT model, members of North York's Curriculum & Staff Development Services and the principals at Boylen, Northview Heights and Vanier Secondary Schools expressed an interest in the 4MAT system as a flexible and practical program delivery model. They subsequently received approval to conduct a pilot project which involved the training of their school staffs and other administrative personnel at a four day 4MAT Summer Institute in 1984.

Since 1984, staff in other North York secondary schools have participated in 4MAT workshops. Many of these teachers have been involved subsequently in developing, field-testing and revising units based on the 4MAT system.

A parallel interest in the 4MAT system occurred in the Scarborough Board of Education with staff at Dr. Norman Bethune C.I. being among the first to participate in 4MAT awareness workshops. Scarborough teachers have also developed curriculum units based on the 4MAT model. A number of these units underwent field-testing during the 1987/88 academic year.

A 4MAT Research Committee was established by North York's Superintendent of Curriculum and Staff Development Services in June, 1987. The members included staff from two of the pilot schools, a principals' representative and staff from Educational Research & Evaluation Services.

Following the development of a preliminary research proposal, a decision was made in consultation with the Superintendent of Program of the Scarborough Board of Education to undertake a collaborative study of the impact of the 4MAT system on staff, students and the learning environment. Two representatives of Scarborough's Research Centre joined the 4MAT Research Committee in September 1987.

Research Questions

The research focused on the following two general questions:

1) Has 4MAT affected teachers' attitudes about differences in students' learning styles?

2) Has 4MAT brought about positive changes in both the teacher and the learner as perceived by teachers and students?

The specific questions addressed included the following:

For Teachers

- What are teachers' perceptions of the impact of the 4MAT approach on:
  - students' attitudes, attendance, participation, achievement?
  - teachers' views of the teaching/learning process, attitudes towards the learner, communication with colleagues and classroom routine/environment?
- What are teachers' perceptions of the impact of the 4MAT approach as compared to their usual approach to teaching a similar topic?
- What problems (if any) did teachers experience in implementing the unit?

- What are teachers' views of the advantages and disadvantages of the 4MAT model of curriculum delivery?

- Do teachers anticipate future involvement with 4MAT (i.e. teaching or developing units)?

For Students

- What are students' perceptions of the differences (if any) between the 4MAT approach and their teacher's usual method of teaching?

- What are students' perceptions of the impact of the 4MAT approach on their learning and attitudes?

- What features of the unit did students like and dislike?

METHODOLOGY

Unit and Teacher Selection

As an initial step, the 4MAT Research Committee decided to enlist teacher volunteers to implement selected 4MAT units and to use their classes as the study group.

The units included in the study were drawn from a pool of 14 units of study based on the 4MAT model which were developed by North York staff and published by O.S.S.T.F.* The 4MAT Research Committee made a preliminary selection of eight of these units to provide a cross-section of disciplines, grades and levels of difficulty. Memoranda listing these units and requesting volunteers were circulated to North York and Scarborough principals, and department heads of the selected disciplines. As a prerequisite, all participating teachers had to have completed a 4MAT awareness workshop. It was hoped to include teachers whose level of familiarity with 4MAT ranged from new to expert users.

Based on the interest expressed by teachers, the Committee selected six units for inclusion in the study. These units are listed below.

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* Copies of the resource booklets containing the units may be obtained by contacting OSSTF, 60 Mobile Drive, Toronto, Ontario, M4A 2P3. Tel: (416) 751-8300

Name of Unit	Grade/Level
Living in the Thirties (History)	10 Basic/General
Le Chandail (French)	11 Advanced
The Newspaper (English)	11/12 Basic/General
Dietary Input (Science)	11 General
Bon Appetit (French)	9 Basic
Career Planning (Business Studies)	12 General

An orientation meeting for participating teachers was held in November, 1987. The purpose of this meeting was to provide teachers with a brief refresher concerning the 4MAT system and details of the research study. Teachers were provided with copies of the units and had an opportunity to review the content with the unit writers. Teachers were asked to estimate approximately when they planned to teach the unit to facilitate data gathering by research staff.

Development of the Interview Schedule and Questionnaires

Research staff developed drafts of the teacher and student questionnaires and the teacher interview schedule; these were revised in consultation with the other members of the 4MAT Research Committee. Topics covered in these instruments reflected the research objectives previously outlined.

A copy of the teacher questionnaire and the interview schedule, which was designed to gather more detailed information, may be found in Appendix A. A copy of the student questionnaire is provided in Appendix B.

Data Collection and Analysis

Upon the completion of the unit, teachers and their students responded to the questionnaires. The follow-up interview with teachers was conducted by the respective North York and Scarborough research staff. These interviews allowed teachers to elaborate on their experiences teaching the 4MAT units. The results of the questionnaires were tabulated by research staff (including the coding of open-ended questions on the student questionnaire); the teacher interview data and teachers' responses to the open-ended survey questions were summarized by another member of the 4MAT Research Committee.

Data were analyzed at the Scarborough Research Centre on an IBM PC/AT computer using the Statistical Package for the Social Sciences (Norušis, 1986). Analyses included the calculation of frequencies and percentages for both the teacher and student surveys. Where appropriate, various items were cross-classified. Relevant or significant findings are reported below.

RESULTS

Study Group

Some attrition occurred in the original sample of participating teachers and classes. Reasons for withdrawal from the study included:

- changes to the teachers' timetables
- inappropriateness of the unit for the level of instruction of some students
- inappropriateness of the content of the unit in view of the focus of the course or previous background of students
- insufficient time to complete the unit in view of the course guidelines.

The final study group consisted of the following:

	Number of Teachers	Students Number	Students Percent
Living in the Thirties	8	173	30
Le Chandail	6	115	20
The Newspaper	7	113	20
Dietary Input	4	87	15
Bon Appetit	4	50	9
Career Planning	2	34	6
TOTAL	31	572	100

Teacher Questionnaire

A tabulation of numerical responses for the teacher questionnaire can be found in Appendix C. The following summarizes the findings of interest for the 30 out of 31 participating teachers who completed the survey.

From the **background information** obtained, it can be seen that participating teachers were quite experienced (average number of years teaching was 18), and over-represented by females (21 females, 9 males). Regarding "learning style" and "brain dominance" of the teachers, no particular patterns emerged although all were represented. More teachers (24) taught the History, English and French units than the Science and Business Studies ones (6). Slightly more than half of these units were taught to grade 11 classes and almost two-thirds of the units (19 of 30) were taught at the general level.

From the **general information** section it was determined that thirty-three percent of the teachers required more than the allotted time to complete the unit, while the remainder completed units within or in less than the time allotted. The group was equally divided between those who were more familiar with the 4MAT learning system (intermediate or advanced workshops) and those whose exposure was more introductory. Likewise, teachers were almost equally represented by those who had previous experience teaching 4MAT units and those who had not.* Of the 22 teachers who had taught the

* This finding is corroborated by students' responses, see page 11. Only about half the students reported noticing a difference in the way the unit was taught compared to their teachers' usual method.

topic using both 4MAT and their regular method, 36 percent reported that the 4MAT method was more effective, whereas 41 percent reported no difference in the effectiveness of the two approaches. Only one teacher believed that her usual method was more effective.

Seventy-seven percent of teachers thought that the 4MAT approach was successful in achieving the unit objectives for most of their students. Similarly, 73 percent reported that students responded positively or very positively to the units.

Further support for the 4MAT system came from indications of the teachers' willingness to teach the same unit again (77%), interest in teaching other 4MAT units (90%), interest in developing other 4MAT units (40%), and interest in attending additional workshops (57%).

Of the 30 teachers who responded to the questionnaire, 21 made additional comments at the end. Comments provided by twelve of these teachers (57%) were positive in tone, and included aspects related to the good design of the units (2), the variety of activities suggested (2), the quality of the resources provided (2) and the fact that the students seemed to enjoy the units and participated in the classroom exercises (4). Three of the teachers indicated that the approach used in the 4MAT units was very similar to their "normal" method of curriculum delivery.

Among the concerns raised by respondents were the following:

- Eight of the teachers commented that the teaching of concepts using the 4MAT approach appeared to take longer than traditional methods.

- Four teachers were of the opinion that the 4MAT model (certainly as a research project) placed too many restrictions on the teacher and did not permit the flexibility to introduce teacher selected activities or student participation in curriculum development.

- Because of the time required to complete 4MAT units, two teachers noted that the requirements of the Ministry Guidelines would not be met if the units were implemented as designed.

- One teacher suggested that the sequence of instruction advocated by the 4MAT model could become too rigid and may even become artificial. According to this teacher, it is important for teachers to be able to pursue the natural flow that emerges in the classroom.

- In the opinion of one teacher, the unit did not appear to meet the needs of a range of student abilities; if anything, the unit tended to meet the needs of the lower range but failed to challenge the brighter students.

- One teacher stated that there were not enough opportunities for higher level thinking, but indicated that the unit could be modified to overcome this deficiency.

Specific comments and suggestions made by the teachers are included in Appendix D.

Teacher Interview

A summary of the information obtained from the 27 teachers who were interviewed is provided below, whereas specific or paraphrased comments may be found in Appendix E. Scheduling problems precluded interviewing the remaining four teachers.

Responding to the question about **implementing the unit as written**, 24 of the teachers indicated that they were able to complete (within reason) the units as they were designed. Ten of the teachers used their professional judgement to make modifications and/or additions to meet the needs and ability ranges of their students. Three teachers indicated problems with attendance, field trips, breaks due to examination schedules and teacher absence which affected the implementation of the unit.

Regarding **problems encountered in teaching the unit**, none of the teachers indicated that there were any that would result in teachers abandoning the 4MAT model. However, fifteen teachers commented that the units appeared to require more time to teach the concepts than they would normally allot. Several teachers indicated that the material warranted the additional time.

When asked to comment on the **advantages of the 4MAT model of curriculum delivery**, all but three of the teachers cited specific advantages of the 4MAT model based on the units they implemented. Eight teachers noted that 4MAT provided opportunities for meeting differences in the learning styles of the students. Others commented on improved student involvement (8), positive responses by students to the greater variety and changes in strategies (8), the advantages of group work (4) and greater student enjoyment (4). Two teachers indicated that the 4MAT approach was similar to what they have always done, although it may be somewhat more systematic.

Of the 23 teachers who cited **disadvantages**, the most commonly mentioned was the considerable time required to complete the unit as designed (14). In other words, teachers would not normally take as much time to cover the topic as was required for the 4MAT unit. Five teachers questioned the suitability of certain materials for some of their students. Several (3) commented on the restrictions that the 4MAT units placed on the instructor in terms of strategies and resources. A number of other teachers (4) discussed possible revisions to the units to resolve some of the difficulties experienced. Individual teachers commented on problems related to evaluation, availability of resources, group work, or confusion in moving from one quadrant to the next.

Responses as to **differences in effectiveness** between the 4MAT method and teachers' usual methods of curriculum delivery revealed no particular pattern, serving to confirm survey data in which a substantial proportion of teachers (41%) reported no differences in effectiveness. Information obtained during the interview indicated that many teachers (10) believe that their normal method of delivery is similar to the 4MAT approach.

In response to questioning about **students' reactions to the unit,** 16 teachers commented that the majority of students seemed to enjoy the unit. This observation appeared to be based on student interest in the topics, enthusiastic participation in activities such as group work, labs, and student presentations, or enjoyment of the variety of activities. Some teachers (6) observed that the students were called upon to engage in activities that were more demanding than normal classroom activities e.g. research, oral dialogue and displays or presentations of student work. Several teachers (4) noted that students found the content and the strategies used in the 4MAT units relevant and realistic.

Regarding **negative reactions from students,** no consistent theme emerged. A few teachers (3) noted that some of their students did not like to be forced into activities, particularly group work. There were indications that some students thought the units or specific parts of the units were too difficult (3), too much work (3), not challenging enough (3) or too long (1). As to whether **students' attitudes toward learning** were influenced by the 4MAT unit, teachers' responses were divided: slightly more than one third noticed positive changes, slightly less than one third didn't notice any difference and one third either didn't know or didn't respond.

The majority of the teachers (20) did not notice any change in **attendance** patterns as a result of introducing the 4MAT unit; only three believed attendance improved. Nineteen of the teachers commented that there was more **student participation** with the 4MAT units compared to their usual teaching methods. Of those who did not notice a change (7), most had already mentioned that they used 4MAT concepts in their teaching prior to their participation in the study.

Eighteen of the teachers indicated in a variety of ways that the **student achievement** improved for the 4MAT units. Some thought that this could be attributed to the fact that the students were motivated, interested and found the material relevant. Others suggested that the variety of approaches had a bearing on student performance. However, seven of the teachers reported no difference in achievement with the 4MAT units. The 2 remaining teachers did not provide comments.

As was determined from survey results, the majority of (23) teachers thought the **4MAT approach was successful with most of their students.** For those teachers who thought that the 4MAT approach had not been successful with some students, a variety of possible explanations was provided in the interview. Teachers' concerns did not deal with the 4MAT approach per se, but rather focused on the appropriateness of certain activities and strategies for some students. For example, integration of ESL or special education students (2), poor attendance (2) and students' personal problems or dietary restrictions (3), or mixed level classes (1) were cited as reasons for the limited success with some students. One teacher suggested that the 4MAT approach may be less successful with Type II learners, while another made a similar comment regarding Type I learners.

The effects of teachers' involvement with 4MAT on their **perceptions of the teaching/learning process** fell into three categories. A considerable number of teachers (12) indicated that as a result of their involvement in 4MAT they are more aware and sensitive to individual differences in learners and the need to respond to those differences. Other teachers (6) indicated that they have made significant changes in their teaching style. However, six teachers responded that they were already teaching by the 4MAT method or using similar methodologies.

Themes mentioned previously were reiterated in response to the question regarding the impact of 4MAT on **teachers' attitudes toward the learner.** Eleven teachers reported that they gained insight regarding differences in students' learning styles and talents and why individuals react differently to a variety of strategies and activities. Several teachers (8) responded that their attitudes toward learners have not changed, in some cases commenting that they have always been sensitive to students. In addition, a few teachers (3) explicitly mentioned changing their teaching styles to accommodate individual differences among students.

While several teachers (8) indicated that their involvement with 4MAT had not resulted in changes to their **classroom routines or environment,** 14 described a range of specific changes such as:

- more student-centered activities (3)
- greater variety in routines and activities (3)
- a less structured environment (which may be more pleasant and creative or confusing and messy) (3)
- more group work (2)
- a more structured environment (1)
- more work for teachers (1); less work for teachers (1).

Most **discussions about 4MAT** that teachers had with colleagues were with other teachers involved in the study (7) or department heads (6). Some teachers perceived a lack of interest in 4MAT by other staff members (4).

Many of the comments in the final portion of the interview were suggestions to the author(s) of the unit for changes, additions or deletions to the content, strategies or resource materials used in specific units. These items have not been included in this report but have been passed on to the authors for their consideration in revisions to the units.

The **additional comments** were for the most part positive (17) with seven teachers indicating that they would be interested in repeating the unit or attempting to write more units either independently or with a group of teachers. Five teachers did not provide additional comments.

Student Questionnaire

I. Responses to Closed-Ended Questions

Because the focus of the study was on 4MAT as a curriculum delivery model rather than specific units of study, the data have been analysed and reported only for the total student sample. Table 1 provides a summary of responses to the closed-ended questions.

TABLE 1

RESPONSES TO STUDENT SURVEY

The method used by your teacher for this unit was called the 4MAT system. It is based on the different ways people learn.

Please indicate how much you agree or disagree with each of the following statements.

	Strongly Agree %	Agree %	Disagree %	Strongly Disagree %	Don't Know %
I think teaching by the different ways students learn makes a lot of sense.	21	63	6	1	9
For this part of the course the students seemed less enthusiastic than usual.	4	24	44	10	18
I prefer the usual method of teaching.	7	28	36	12	16
The 4MAT system makes learning more fun.	18	53	14	2	12
I think I learned more with the 4MAT system.	15	45	19	4	16
I wish more of my courses were taught this way.	16	46	20	6	12
Learning by the 4MAT system is a lot more work compared to the usual method.	9	32	40	7	12

The opinions expressed by **students were generally favourable to the 4MAT approach.** The majority of students (84%) agreed that teaching by the different ways students learn makes sense. Almost three-quarters (71%) agreed that the 4MAT system made learning more fun. Slightly more than half (54%) believed that students were enthusiastic about the section of the course involving the 4MAT unit, while only 28 percent felt that students were less enthusiastic than usual.

Nearly half of the students (48%) disagreed that their teachers' usual approach was preferable to the 4MAT method. Only about one-third (35%) indicated that they preferred the teachers' usual method of teaching. Roughly similar proportions of students agreed that they learned more with the 4MAT system (60%) and wished that more of their courses were taught using the 4MAT approach (62%). About one-quarter disagreed with these statements, thereby showing no preference for the 4MAT approach.

Opinions were divided regarding whether the 4MAT approach to learning entailed "a lot more work" than the usual method. Forty-one percent thought that it did, whereas 47 percent disagreed.

For all of these questions, the percentage of students who responded "Don't Know" was fairly high, ranging from 9 percent to 18 percent. Students' uncertainty about how to respond may be due to one or more of the following:

- some students may have not clearly understood the explanatory preface regarding the 4MAT system
- some may have experienced difficulty interpreting specific questions
- some may not have perceived a difference between the 4MAT approach and the teacher's usual method.

The latter explanation for the relatively high proportion of "Don't Know" responses may be supported by the fact that **47 percent of the students reported that they did not notice a difference in the way the unit was taught from the usual method used by their teacher.** In the light of this finding, responses to these questions were tabulated separately for those students who noticed a difference in teaching methods compared to those who did not. These results are reported in Table 2. Statistical analyses indicated that the ratings of these two groups of students differed significantly for all questions.

Compared to students who did not notice a difference between their teachers' usual method and the 4MAT approach, **students who did perceive a difference were:**

- more likely to agree that teaching according to students' learning styles makes sense
- more likely to agree that the 4MAT method makes learning more fun
- more likely to think they learned more with the 4MAT system
- more likely to wish that other courses were taught using 4MAT

TABLE 2

BREAKDOWN IN STUDENT RESPONSES BY WHETHER THEY NOTICED A DIFFERENCE IN TEACHING METHODS

The method used by your teacher for this unit was called the 4MAT system. It is based on the different ways people learn.

Please indicate how much you agree or disagree with each of the following statements.

	Difference in Methods*	Strongly Agree %	Agree %	Disagree %	Strongly Disagree %	Don't Know %
I think teaching by the different ways students learn makes a lot of sense.	Yes	23	62	7	1	6
	No	17	64	5	1	13
For this part of the course the students seemed less enthusiastic than usual.	Yes	4	21	50	12	13
	No	3	27	41	6	23
I prefer the usual method of teaching.	Yes	10	24	40	16	10
	No	4	32	33	8	23
The 4MAT system makes learning more fun.	Yes	24	52	15	2	7
	No	12	54	15	2	18
I think I learned more with the 4MAT system.	Yes	21	46	19	4	10
	No	10	43	21	4	22
I wish more of my courses were taught this way.	Yes	22	46	17	6	9
	No	10	45	24	5	16
Learning by the 4MAT system is a lot more work compared to the usual method.	Yes	10	33	41	8	8
	No	8	29	41	6	17

* For all items the responses of students who said "Yes" differed significantly from those of students who reported not noticing a difference in teaching methods.

. slightly more likely to agree that the 4MAT method involves more work
. more likely to disagree that students were less enthusiastic than usual with the 4MAT approach
. less likely to say they preferred the usual approach to teaching
. less likely to say "Don't Know" to all questions.

Thus, the students who noticed a difference in teaching methods expressed more positive opinions about the 4MAT approach than students who did not notice a difference.

Because approximately half of the teachers had considerable familiarity with 4MAT through intermediate or advanced workshops or previous teaching of 4MAT units, additional analyses were conducted to determine whether teacher familiarity was related to students noticing differences in teaching methods. No relationship was found for prior experience teaching 4MAT units. However, a relationship of borderline statistical significance was found for the level of workshop attended. Students whose teachers had attended only the 4MAT awareness workshop were less likely to notice a difference in methods.

Although it would have been interesting to determine if teachers' learning styles related to various student outcomes (e.g. whether students noticed differences between the 4MAT approach and their teacher's usual method), the number of teachers representing each learning style was too small to permit statistical analysis.

II. Responses to Open-Ended Questions

The following is a summary of students' reponses to the open-ended questions. Appendix F provides a detailed compilation of their remarks.

Students who noticed **differences in the way the unit was taught,** compared to their teachers' usual method, were asked to comment on those differences. Most frequently cited of the differences in teaching methods was that 4MAT entailed greater use of group work, discussion, oral presentations and greater class participation (29%). Among the other differences noted, a substantial proportion of students indicated that the 4MAT method:

. involved differences or greater variety in the way the teacher presented material (19%)

. involved different types of, or more variety in, student projects and assignments (17%)

. was more interesting, enjoyable, relevant or practical (16%)

. led to increased understanding, obtaining more help and learning more than in the past (15%)

. involved students being more responsible for their work and having greater opportunities for choice, self-expression and/or independent study (15%).

For the 12 percent of students who commented on the difficulty of the unit or the time required for its completion, opinion was split as to whether the 4MAT units were easier, less work or were finished faster than usual, or whether the units involved too much time, detail or work.

All students were also asked **what they liked and disliked about the units.** The majority of students (85%) listed one or more features of the 4MAT units which they liked, reiterating some of the themes already mentioned. Of the remaining students, 12 percent did not comment and 3 percent reported that there was little or nothing about the units which they liked.

One-quarter of all students liked the greater class participation and more frequent use of oral presentations, group work and discussions. Some students elaborated on this theme, citing improved class co-operation, participation by a greater number of students and freer communication. Others indicated that group work exposed students to different opinions and ways of thinking, and provided opportunities for students to use their particular skills and to help each other learn.

Comments about the greater variety or choice in student projects and assignments or about interesting or enjoyable assignments, projects or evaluation methods were made by 19 percent of students. Students frequently said that they enjoyed such projects as poster-making, researching a topic, writing a diary, making a newspaper, or conducting experiments.

Other features of the 4MAT units which students liked included:

. the greater relevance or practicality of what they learned, e.g. how to order food, plan a proper diet, how to prepare resumes and application letters (12%)

. greater variety in or specific methods used by teachers to present material, e.g. material presented in a more organized, interesting or enjoyable way, more visual modes of presentation (11%)

. the content of the unit or topics covered (11%)

. greater opportunities for students to be creative, use their imagination or be responsible for their work (8%)

. general comments that the unit was more interesting or enjoyable (8%)

. the units were easier, could be completed faster or involved less work (5%).

Compared to the proportion of students who described what they liked about the units, a smaller proportion (53%) responded when asked to describe what they disliked. Of the remaining students, 22 percent provided no comments, while another 25 percent indicated that they either liked everything or couldn't think of anything that they did not like.

Students most frequently commented on specific assignments, projects or methods of evaluation which they disliked (14%). A further 10 percent felt that the unit was boring, took too long to complete or was too repetitive or easy. Other students disliked one or more of the following features of the units:

. the greater amount of written work, homework, tests or projects (9%)

. working in groups or doing oral presentations, e.g. interpersonal problems within groups, difficulty co-ordinating efforts, excessive talking in class, nervousness about oral presentations (8%)

. content of unit (7%)

. specific methods or procedures used by teachers to present material or poor organization of content, time and/or materials (6%).

Students were provided with an opportunity to make **additional comments.** The majority of responses overlapped with comments to previous questions and, therefore, are not reported in detail. Appendix G provides a sample of students' remarks. Some students elaborated on the positive features of the 4MAT approach or the specific unit, or offered suggestions regarding how to make the approach more beneficial to students. Others were critical of specific aspects of the unit, felt the level of the material was inappropriate or expressed other concerns.

CONCLUSIONS

The research addressed two major questions:

- Has 4MAT affected teachers' attitudes about differences in students' learning styles?
- Has 4MAT brought about positive changes in both the teacher and the learner as perceived by teachers and students?

The results were generally positive for both teachers and students. Among the findings of particular interest was the fact that teachers' awareness of individual learning styles increased. In addition, concerted attempts were made by teachers to implement methodologies to meet the needs of students with different learning styles. Most students responded with enthusiasm to the variety of teaching/learning strategies which the 4MAT system advocates.

Although most teachers favoured the multi-faceted approach of the 4MAT system, the emphasis on "process" rather than "product" in learning, and the practical application emphasized in the 4MAT system, there were concerns expressed about the time required to cover the content using 4MAT and the relevance of some of the activities. Some commented that time and content provisions of Ministry Guidelines do not always allow them to pursue a style of teaching that is compatible with "enlightened" pedagogy. In order to address the teachers' concerns, further attention is warranted to reconcile these competing demands.

The data gathered in the present study suggested that the 4MAT approach may represent more of a departure from teachers' usual methods of curriculum delivery for some subject areas than others. Whether students noticed a difference in teaching methods was to some extent linked to the unit taught.* These differences among units raise some interesting hypotheses for **future research.** For example, it is possible that the benefits of the 4MAT system may depend in part on subject area, grade level (ranging from the elementary to secondary panels), or students' learning style, ability level or special needs. The issue regarding the effectiveness of the 4MAT system in enhancing student learning, as compared to other modes of curriculum delivery, was also beyond the scope of the present study. Further investigation of this issue would require a more elaborate design.

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* Only 33 percent of students who completed the "Dietary Input" unit noticed a difference between the 4MAT approach and the teacher's usual method of curriculum delivery. However, sixty-three percent of students completing the "Living in the Thirties" unit noticed a difference in methods. For the remaining units, students were approximately evenly divided on this issue.

In general the research results suggest that continued attention to 4MAT as a curriculum delivery model is warranted.

In keeping with the current trends in education, the 4MAT system is compatible with emphases on:

- student-centered learning
- cooperative learning
- peer coaching among teachers
- adapting teaching and evaluation strategies in view of student learning styles, as outlined within OS:IS

and could be integrated within the context of these initiatives. Such integration would provide a framework within which the 4MAT system could be more extensively implemented in classrooms.

REFERENCES

McCarthy, Bernice. The 4MAT System. Barrington, Ill.: Excel Inc. 1986

Norušis, Marija J. SPSS/PC+ for the IBM/PC/XT/AT. Chicago: SPSS Inc., 1986

APPENDICES

A to G

4MAT RESEARCH PROJECT

TEACHER INTERVIEW SCHEDULE

Name: _____

Unit: Le Chandail ☐1 Dietary Input ☐2 Career Planning ☐3
Bon Appetit ☐4 The Newspaper ☐5 Living in the Thirties ☐6

1.a) To what extent were you able to implement the unit as it was written? In what ways did you find it necessary to modify the unit?

_____

_____

_____

_____

_____

b) Please describe any problems you encountered in trying to implement the unit. (e.g. difficulty completing the unit within the allotted time).

Probe: Would these problems affect your willingness to teach this unit again or to teach other 4MAT units?
Probe: Do you have any suggestions regarding how teachers or unit developers could avoid or minimize such problems?

_____

_____

_____

_____

c) Based on your experiences teaching this unit, what are the advantages and disadvantages of the 4MAT model of curriculum delivery?
Advantages: _____

_____

_____

Disadvantages: _____

_____

_____

2. We previously asked teachers who have taught the same topic using both 4MAT and other approaches (e.g. their usual method), whether they thought the approaches differed in their overall effectiveness in achieving unit objectives. If you have noted some differences in overall effectiveness, please describe those differences.

_____

_____

_____

_____

3.a) What sort of reactions to the unit did you have from students during the process of teaching it or upon completion?

_____

_____

_____

_____

b) If students seemed indifferent to the 4MAT unit or reacted negatively, do you have any thoughts about why they felt that way?

_____

_____

_____

_____

4. What specific effects, if any, has your delivery of this 4MAT unit had on your students in the following areas:

a) attitudes toward learning? _____

_____

_____

b) attendance? _____

_____

_____

4. (continued)

c) class participation? _____

_____

_____

d) achievement? _____

_____

_____

e) other (please specify) _____

_____

_____

5. We previously asked you to estimate how successful the 4MAT approach was for your students. If you feel that the 4MAT approach was not successful for a number of your students, why do you think that might be?

_____

_____

_____

_____

6. What effects, if any, has your involvement with 4MAT had for you in terms of:

a) your perception of the teaching/learning process? _____

_____

_____

b) your attitude towards the learner? _____

_____

_____

c) your classroom routine/environment? _____

_____

_____

6. (continued)

d) discussions with other teachers? _____

_____

_____

e) other? (please specify) _____

_____

_____

7. Any additional comments you'd like to make?

_____

_____

_____

_____

_____

THANK YOU FOR YOUR CO-OPERATION

NORTH YORK/SCARBOROUGH 4MAT RESEARCH PROJECT

TEACHER SURVEY

For Office Use Only

SECTION A: BACKGROUND INFORMATION

1. Name: _____ ☐☐☐ 1, 2, 3

2. Years of teaching experience: ☐☐ 4, 5

3. Sex: Male ☐1 Female ☐2 6

4. What is your learning style? (please circle)

Type 1 2 3 4 Don't Know 7

5. What is your brain dominance? (please check)

Right ☐1 Whole ☐2 Left ☐3 Don't Know ☐4 8

6. a) Name of unit (check only one):

Le Chandail ☐1 Dietary Input ☐2 Career Planning ☐3

Bon Appetit ☐4 The Newspaper ☐5 Living in the Thirties ☐6 9

b) Grade (please circle): 09 10 11 12 10, 11

c) Level (please check):

Advanced ☐1 General ☐2 Basic ☐3 12

SECTION B: GENERAL INFORMATION

1. The amount of time required to teach the unit was:

within the allotted time . . . . . ☐1

greater than the allotted time . . . . . ☐2 13

less than the allotted time . . . . . ☐3

2. What was your level of exposure to the 4MAT LEARNING SYSTEM prior to teaching this unit? (check all that apply)

informal instruction/reading . . . . . ☐1 14

attendance at an awareness workshop . . . . . ☐1 15

attendance at an intermediate/application workshop . . ☐1 16

attendance at an advanced workshop . . . . . ☐1 17

3. How would you describe your experience teaching 4MAT units prior to participation in this project?

never taught 4MAT units . . . . . ☐ 1

have previously taught 4MAT unit(s) . . . . . ☐ 2 18

have taught and developed 4MAT lessons/units . . . . . ☐ 3

4. Have you ever taught unit(s) of study on this topic before?

Yes ☐ 1 No ☐ 2 19

a) If yes, please indicate whether the unit(s) on this topic was (were): (check one only)

based on the 4MAT model . . . . . ☐ 1

based on regular methods (other than the 4MAT model) . ☐ 2 20

I have taught this topic using both 4MAT and regular methods . . . . . ☐ 3

b) If you have taught this topic using both methods, which method have you found to be more effective with your students? (i.e., in achieving the objectives of the unit)

the 4MAT method . . . . . ☐ 1

your usual method . . . . . ☐ 2 21

no difference . . . . . ☐ 3

5. In the 4MAT unit you have just completed, for how many of your students do you feel the 4MAT method was successful? (i.e., in achieving the objectives of the unit)

all of them . . . . . ☐ 1

most of them . . . . . ☐ 2

about half . . . . . ☐ 3 22

a few . . . . . ☐ 4

none . . . . . ☐ 5

6. Generally, how would you rate the reactions of students to the 4MAT unit?

very positive . . . . . ☐ 1

positive . . . . . ☐ 2

indifferent . . . . . ☐ 3 23

negative . . . . . ☐ 4

very negative . . . . . ☐ 5

7. Would you teach this 4MAT unit again?

Yes ☐1 No ☐2 24

If no, why not? _____

_____

_____

8. Would you like to teach other 4MAT units?

Yes ☐1 No ☐2 25

If no, why not? _____

_____

_____

9. Would you be interested in helping to develop 4MAT units?

Yes ☐1 No ☐2 26

10. Would you be interested in attending additional workshops on the 4MAT LEARNING SYSTEM?

Yes ☐1 No ☐2 27

11. Additional Comments: _____

_____

_____

_____

_____

THANK YOU FOR YOUR CO-OPERATION

E.R.E.S.
Nov./87

4MAT RESEARCH PROJECT

STUDENT SURVEY

For Office use only

1,2,3,4

1. The name of the unit (topic) you have just completed is:

   Le Chandail ☐1 Dietary Input ☐2 Career Planning ☐3 — 5

   Bon Appetit ☐4 The Newspaper ☐5 Living in the Thirties ☐6

---

2. **The method used by your teacher for this unit was called the 4MAT system. It is based on the different ways people learn.**

Please indicate how much you agree or disagree with each of the following statements (check the appropriate box).

	Strongly Agree 1	Agree 2	Disagree 3	Strongly Disagree 4	Don't Know 5	
a) I think teaching by the different ways students learn makes a lot of sense.	☐	☐	☐	☐	☐	6
b) For this part of the course the students seemed less enthusiatic than usual.	☐	☐	☐	☐	☐	7
c) I prefer the usual method of teaching.	☐	☐	☐	☐	☐	8
d) The 4MAT system makes learning more fun.	☐	☐	☐	☐	☐	9
e) I think I learned more with the 4MAT system.	☐	☐	☐	☐	☐	10
f) I wish more of my courses were taught this way.	☐	☐	☐	☐	☐	11
g) Learning by the 4MAT system is a lot more work compared to the usual method.	☐	☐	☐	☐	☐	12

3. Did you notice any differences in the way this unit was taught from the usual method used by your teacher?

Yes ☐1 No ☐2 13

If "Yes", what were the differences? _____

_____

_____

_____

4.a) What did you like best about this unit and why? _____

_____

_____

_____

b) What did you dislike about this unit? _____

_____

_____

_____

5. Additional Comments:

_____

_____

_____

_____

_____

THANK YOU FOR YOUR CO-OPERATION

ERES
Revised
Nov/87

RESPONSES TO TEACHER SURVEY*

SECTION A: BACKGROUND INFORMATION

1. **Name:** _____

2. **Years of teaching experience:** Average [18] Range [8 to 35]

3. **Sex:** Male [9] Female [21]

4. **What is your learning style?**

Type:	1	2	3	4	3&4	Other Combinations	Don't Know
	[2]	[6]	[4]	[7]	[3]	[5]	[3]

5. **What is your brain dominance?**

Right [6] Whole [10] Left [5] Don't Know/N.R. [9]

6. a) **Name of unit:**

Le Chandail [6] Dietary Input [4] Career Planning [2]
Bon Appetit [4] The Newspaper [7] Living in the Thirties [7]

b) **Grade:**

9	10	9&10	11	12
[7]	[3]	[1]	[16]	[3]

c) **Level:** Advanced [7] General [19] Basic [4]

SECTION B: GENERAL INFORMATION

1. **The amount of time required to teach the unit was:**

within the allotted time ..... [17]
greater than the allotted time ..... [10]
less than the allotted time ..... [3]

---

* Due to the small sample size (N=30), numbers rather than percentages are reported.

2. **What was your level of exposure to the 4MAT LEARNING SYSTEM prior to teaching this unit?** (Check all that apply)

informal instruction/reading ..... [9]
attendance at an awareness workshop ..... [20]
attendance at an intermediate/application workshop ..... [12]
attendance at an advanced workshop ..... [3]
no response ..... [4]

3. **How would you describe your experience teaching 4MAT units prior to participation in this project?**

never taught 4MAT units ..... [16]
have previously taught 4MAT unit(s) ..... [10]
have taught and developed 4MAT lessons/units .. [4]

4. **Have you ever taught unit(s) of study on this topic before?**

Yes [25] No [5]

a) **If Yes (N=25), please indicate whether the unit(s) on this topic was (were):**

based on the 4MAT model ..... [2]
based on both regular methods and the 4MAT model ..... [22]
no response ..... [1]

b) **If you have taught this topic using both methods (N=22), which method have you found to be more effective with your students? (i.e. in achieving the objectives of the unit)**

the 4MAT method ..... [8]
your usual method ..... [1]
no difference ..... [9]
no response ..... [4]

5. **In the 4MAT unit you have just completed, for how many of your students do you feel the 4MAT method was successful? (i.e. in achieving the objectives of the unit)**

all of them ..... [0]
most of them ..... [23]
about half ..... [6]
a few ..... [1]
none ..... [0]

6. **Generally, how would you rate the reactions of students to the 4MAT unit?**

very positive ..... [5]
positive ..... [17]
indifferent ..... [4]
negative ..... [0]
very negative ..... [0]
no response ..... [4]

7. **Would you teach this 4MAT unit again?**

Yes [23] No [7]

8. **Would you like to teach other 4MAT units?**

Yes [27] No [3]

9. **Would you be interested in helping to develop 4MAT units?**

Yes [12] No [16] N/R [2]

10. **Would you be interested in attending additional workshops on the 4MAT LEARNING SYSTEM?**

Yes [17] No [12] N/R [1]

11. **Additional Comments:**

TEACHER SURVEY: RESPONSES TO OPEN-ENDED QUESTIONS

Portions of the unit are good but I would like to remove some of the restrictions and use my own activities. I need more freedom in my teaching style. Materials were excellent and the students enjoyed the project.

Well developed and excellent.

The 4MAT learning system is great.

The amount of time required to complete this unit (3 weeks) makes it impossible to meet the required reading specified by the Ministry for this course.

My concern is that the 4MAT method requires more hours to complete. Less time might be taken if the students were familiar with the model or if they had at least been exposed to it before.

My regular approach is similar to 4MAT. General Level courses should appeal to both right and left brain dominance. Lab courses tend to be 4MAT oriented.

My current teaching style uses many of the concepts of the 4MAT model. My students may not be able to see any difference in this method of delivery.

When I teach this unit again, I will make changes to the timing and evaluation.

The unit was heavily slanted toward female students and the Ministry Guideline for the course stresses equal applicability. I enjoyed teaching the unit.

Would teach the unit again but would need to "streamline" the presentation. Would try other 4MAT units in her subject field. A successful unit....the students enjoyed it and participated more than normal. The results of the final activity were outstanding.

I like the variety it gives in presenting the topic.

If I taught the unit again, I would modify the unit to include more vocabulary practice.

I was very impressed with the unit and the students seemed to enjoy working with it.

Some of the activities suggested in the unit seemed to appeal to the lower level of the class and the upper half of the class found some of the activities too easy. "Partnering" was enjoyed best by the class. Unit seemed better for grade 11 than 12 but the 4MAT method was "great for teaching this unit".

Would prefer to have more in-depth applications and get the students more involved in the development of the activities. Would want to implement units that stress the thinking skills of the students more than what is evident in this example. There is a need to address more than just the surface elements of the learning process in the unit.

The unit restricted my delivery and did not allow "us" to pursue things that arose naturally. Would prefer a design that permits a combination of my style and 4MAT to avoid regimentation and sequencing.

The variables in the classroom made it very difficult to hold to the design. More time should have been spent in explaining the unit before the research study began. Not enough opportunity for the students to actually write....which they really need. Material selected was well-chosen.

The 4MAT concept is good but this unit needs to be improved.

Some of the activities were repetitive. The restriction of following the sequence of the model presented an artificial experience.

The ten periods required for this unit is too long for general level students.

Teacher has always encouraged a variety of learning strategies and, therefore, 4MAT makes a lot of sense. If there was one criticism, it was that the unit took too long and there was too much repetition.

The unit was too time consuming for a minor topic. It will have to be combined with another unit next time.

TEACHER INTERVIEW DATA*

1(a) To what extent were you able to implement the unit as it was written? In what ways did you find it necessary to modify the unit?

Completed the unit pretty well as designed.

Students needed more preparation and practice so additional exercises were introduced.

Completed everything as suggested with the modification that grammar practise was supplemented.

Difficulties with a split level class and poor attendance made it difficult to complete unit as designed.

OK until quadrant 4....assigned for homework.

Completed the unit as designed with the exception of elimination of one experiment which was agreed to by the team [before the study].

Completed the unit with minor modifications to the design and a reduction in the number of student options.

Completed the unit with three omissions which were agreed to be optional by the team [before the study].

Completed the unit with minor modifications and the addition of some of the teacher's own resources.

Implemented as written with some exceptions due to time or availability of resources.

Followed "pretty well exactly".

Quite closely except for a delay in completing the field trip.

Completed 75% due only to time. Basic level class seemed to take longer to cover the material than the time allotted in the unit. No modifications made to the unit.

Completed the unit as designed but would make changes if done again and modify the exercises to meet the needs of the students and their level of understanding.

Followed the unit with one minor alteration.

---

* Included in this appendix are paraphrases of each teacher's responses to the interview questions.

Unit was followed closely with minor modifications to the amount of written work.

Unit was completed adequately with more in-depth questioning and analysis added to make work more challenging.

Unit was completed with modifications and/or additions to make it more challenging and less simplistic.

No changes made to the research unit of study.

Implemented very closely....chose the more direct and structured assignments for her students.

Completed as designed with the exception of the use of a film that was not available.

Implemented 90% as written with minor modifications to some of the resources and activities.

Unable to get all the resources necessary and, therefore, made modifications and adjustments to content and evaluation.

Implemented with minor adjustments regarding movie and stock market crash.

Completed except for step 4 of quadrant 2....unable to locate materials.

Completed except for a substitution for the short story.

Completed but used own assignment for quadrant 4.

1(b) Please describe any problems you encountered in trying to implement the unit.

No problems. All resources readily available.

The unit should only take half the time that has been given to it.

Prefer to have more freedom in the selection of materials ..... Gave too much time to the unit (possibly due to the March Break and supply teachers).

Problems with attendance the fact that the unit was not designed for adult students caused problems. Took longer than expected. Would be better taught at a higher grade.

Too much time for a short story, but would do it again this way if OS:IS allowed it.

No problems in time or material.

Some problems in covering the unit within the time, but this is a general problem with new Guidelines. Better appendix is necessary.

Pressure of time....but the unit deserves the time allotted for it.

Unit required more time than normal because of the addition of the learning strategies incorporated in the design.

Not enough time....forced to do individual work rather than group work.

The unit took three days longer than anticipated, but it was worth it. If repeated some deletions would be made.

Unit took longer than teacher normally spends on topic but the time appeared to be needed by the students.

No problems except that some of the students could not participate in the field trip for dietary reasons.

Quadrant 1 activity did not work, but could be modified to be more successful next time. Attendance proved to be a problem. Implemented the unit on time with some additions and variations.

No problems. Went well and can be taught in less time.

Materials were difficult to access and organization was sometimes difficult to follow and, as a result, some sections were eliminated.

The unit design was too restrictive and sequential. There was little student growth, mostly consolidation. The unit should stress more analysis and less comparison.

No problems....usable with minor modifications.

Not enough time....had to eliminate one section.

Time was a problem and would speed up next time.

The length of the unit is a problem which could be solved by tightening up the activities. Some of the activities needed to be explained to the students as the wording was too difficult.

No problems with time....had problems grouping with equal balance of male and female.

Unit went well with general level class, but the teacher has reservations about the material for a basic level group.

School activities interfered with timing but would like to try again with more time.

Unit is too long.

Unit too three days longer than estimated but it was important to do the library research phase designed by the teacher.

The movie activity was not successful in the opinion of the teacher.

Unit took three weeks this year as the students were slower. More theory necessary.

1(c) Based on your experiences teaching this unit, what are the advantages and disadvantages of the 4MAT model of curriculum delivery?

Advantages

All the parts of the unit are great.

Improved oral ability, better quality written work, more interesting good variety.

Made for more project work, more equitable for different types of learners, acknowledged those with an artistic flair.

The model requires greater participation on the part of the students, particularly in the oral sections. It provides activities that broaden the course.

Teaching according to learning styles meant there was something for everybody. Students enjoyed it.

Evaluation methods proved to be very useful. Approach seemed to have definite appeal for general level students who seemed to like doing things themselves even though they were thought to be very simple to the teacher. Variety of presentations and delivery was excellent. Preference on the part of students for action and involvement rather than note taking.

Emphasized the need to motivate students at the beginning of the unit and the need for student centred activities.

Subject has always been taught the way the unit was designed; however, the model has formalized the theory for the teacher.

Well designed for different needs of students and for group work. Acknowledged the right brain-motivated student.

Students enjoyed the unit. Teacher has always taught this way.

Students were interested and responsive. Good pacing and variety.

Meets the needs of students with different learning styles because of the different approaches, e.g. hands on, experiential, relevance, fun, etc. Can be very successful just as it stands, but could be improved with greater flexibility, less repetition and more time.

Variety of teaching methods and the logical sequence of presentation are benefits to students.

More activities than the normal "passive" approach. Good group work and an apparently happier environment.

The students found the unit enjoyable and the teacher was particularly pleased by the response to the 4th quadrant activities which were particularly well received by the senior students. However, she is not sure that there is time to do quadrant 4 activities as often as she would like to.

Lots of variety and movement in an action based learning environment.

The unit design forces the teacher to give consideration to the various learning styles of the students.

The unit teaches to student learning styles.

Orderly, well explained, well documented and good sequencing.

4MAT seems appropriate for the social sciences. The unit is similar to what is normally done but with the addition of the quadrant 4 activities. 4MAT is based on the principles of good learning. Improved teacher's knowledge of learning styles.

Teacher was forced to vary teaching methodologies.

Teacher likes the variety.

The methodology reaches kids not normally reached particularly at the general level. Some kids encouraged to learn in new ways with good variety.

Repetition of themes was good. Group work was good. Good lead up to project work. More relaxed atmosphere.

4MAT is to a large extent what the teacher had always done.

Students more involved. Group assignment worked well. Experiential element and active participation.

No response (1)

Disadvantages

Some of the activities, particularly the group activities and those in quadrant 4, could be redesigned to take less time.

Unit takes too much time.

Difficult to evaluate progress in French in some of the quadrants.

Unit took longer than expected especially due to poor attendance, illness and interruptions. Material seemed to be too difficult for target group.

Time element a major problem.

No disadvantages for general level; however, the advanced level probably could not afford the time to cover the content and the lecture method would have to be used. Further, the group work probably could not be used in the advanced level.

There is less content in this unit compared to what would be covered in a normal unit with the same amount of time.

Only concern is time.

The methodology is excellent but too much to expect teachers to do all the preparation necessary. If whole course was done this way, it would be excellent but the units would have to be condensed.

A more challenging selection of content could have been included in the unit.

Attendance is a problem with basic level students particularly if the student misses the quadrant most appropriate to him/her. Had hoped that 4MAT might improve attendance.

Very good....but the 4MAT approach could not be used all the time because it would be impossible to cover all the curriculum.

The group work tended to be time consuming and lead to excessive socializing.

The sequential nature of the units is too restrictive. The content was too confining.

Not enough time. The nature of the research unit does not give enough opportunity for other techniques. The unit does not acknowledge other learning style theories.

Very time consuming as laid down.

Time required. Not significantly different from the normal delivery style (activity approach) of the teacher. Too bad that "traditional" teachers did not volunteer for the project.

Teacher experienced some confusion in the transition from one quadrant to the next.

Some problems with group work mainly because the students were not used to this methodology. Lack of resources can be a problem. Otherwise no problems.

Content difficult to cover in time allowed.

Unit did not motivate poor students. Some of the group activities were "questionable". Once locked into the 4MAT process, there is no allowance for special circumstances.

Concerns were raised about the time allocation particularly attempted to fit the 4MAT structure into 70 minute periods. One activity is too long for that period and the teacher suggested she would prefer shorter activities so that more than one could be done in a period.

One activity (Blue Kimono) was too difficult for the class.

No disadvantages (4).

2. **We previously asked teachers who have taught the same topic using both 4MAT and other approaches whether they thought the approaches differed in their overall effectiveness in achieving unit objectives. If you have noted some differences in overall effectiveness, please describe those differences.**

Not taught the unit before, but quadrant 1 activity worked very well.

Teaching style has always been similar to 4MAT and, therefore, I see no difference in effectiveness.

This unit involved more oral discussion and practice.

Teacher had taught the unit before but got much more out of it this time and the film approach was enjoyable....however, the results were comparable.

Has taught the unit before but the methodology was much the same. Science lends itself to an experimental, hands-on approach which is similar to 4MAT.

Used much of the 4MAT method in the past informally, but the quadrant 4 activity promoted a more effective learning environment and more creative student output.

The unit did not allow for the processing of some of the student work that was done before and was important.

Students did a much better job on this unit than with others, particularly in the simulation exercise. The student performance in the quadrant 4 activity was excellent.

Less discipline problems as the students are kept busy and the variety of methodology holds their attention. Does not, however, overcome problem of pronunciation.

The 4MAT method used in this unit is similar to usual method of prepared materials we have used in the past.

Hard to say if any differences are evident because teacher has been incorporating much of the 4MAT approach in her delivery since she attended 4MAT workshops.

Method very similar to her regular method of teaching, however, she would not normally spend as much time in the fourth quadrant. Differences may be more evident at the senior level.

In a similar unit, much more detail was covered using regular methodology.

Had incorporated many of the concepts of 4MAT before teaching this unit so that differences were difficult to isolate.

Using 4MAT teacher got better student achievement and the students wrote more.

No noticeable differences....except extent and detail.

4MAT similar to the approach usually used, but the activities suggested in the unit were enjoyed by the students and will be used again by the teacher when the unit is taught. The activities have been recommended to other teachers.

Variety of activities was demanding but students have not been tested yet.

Generally the same as the teacher's normal approach but would not have had the "hook" of quadrant 1 which was very effective.

The unit achieved the objectives but the teacher has some reservations that the Type 2 learners could have covered a lot more content....however, the variety of activities was probably good for them.

The variety of techniques used in a concentrated manner helped to maintain the students' attention.

Teacher had taught the topic before and did not notice a great deal of difference with the use of 4MAT.

Because of the nature of the topic, it lends itself to a 4MAT approach similar to what she has used in the past. Would like to try 4MAT with another topic.

Teacher did not feel sufficient grasp of the theory to make a comment but liked the "personal experience" approach.

No response (2)

3(a) **What sort of reactions to the unit did you have from students during the process of teaching it or upon completion?**

The unit maintained the students' interest and they looked forward to what was coming next. Students liked the group activities, especially the movie activity, but the response to the tests was the "standard grumbling".

Students enjoyed the oral activities and the student presentations (the competitive nature of the activity).

Students like the variety of activities particularly the presentations. More discussion than normal.

Since we had not done much oral work, there was considerable resistance to those activities. However, there was reasonable acceptance of the unit.

Not sure that the students noticed any difference. Some said there was too much work and there was varied response to engaging in the activities. Discussion was difficult due to weak vocabulary skills.

Teacher was surprised how excited the students were about displaying their work and presenting their results. Students enjoyed small group work and the labs. The activities and the content of the unit really interested the students.

Good student reaction to the group activities and the labs. Otherwise not much difference between 4MAT and the usual approach.

Teacher not able to compare. Students had difficulty with the quadrant 4 activities because they were not used to finding their own sources of information; they usually just used encyclopedias.

Students seemed interested in the varied activities related to dietary input and nutrition.

Students were much more responsive....animated, and talkative....a positive student reaction.

The unit grabbed the students' attention. They were more enthusiastic about the subject and even surprised with the activities. Since their vocabulary was facilitated, they felt they were succeeding and did well on the test (flash cards).

Students felt positively toward the unit because they found the vocabulary easier. The activities were directly related to their lives.

Students liked getting marks for everything that they did. They like the dialogues, the menu project and the art work.

All students seemed comfortable with the quadrant 1 activity. There were lots of positive comments from the teacher which was unusual for her students. Students responded well to assignment sheets.

First time teacher found it difficult to compare, but most students seemed to enjoy the unit although a few seemed to prefer more traditional methods.

The students went along with the unit but seemed to take the "easy way out" when given choice.

Students had mixed reaction to the unit, but in the opinion of the teacher, his students "would have been indifferent to anything". They did not like the final test.

The students enjoyed the unit, participated well and appreciated the relevancy of the topics.

Students were unusually interested and cooperative. A lot of explaining was required by the teacher.

Students liked the topic and could identify with the issues raised in the story and in the unit. The material captured the attention of the students and they seem to like studying that era.

There was confusion and constant clarification was needed to explain to the students what to do.

Excellent response from the students to the project work in quadrant 4 and the activity in quadrant 1. Some excellent results from the group work.

A lot of enthusiasm for group work.

The unit was long but the students persevered. The presentation was difficult for the students as they need more preparation time for this activity during the year.

The students really identified with the depression....a normal reaction for this topic. Diary approach worked very well. Students got into the small group work and the role playing.

Mixed reaction....80% like the 4MAT approach, but 20% preferred a more teacher centred method. All liked the group work.

No differences noted.

3(b) If students seemed indifferent to the 4MAT unit or reacted negatively, do you have any thoughts about why they felt that way?

None of the students appeared to react negatively.

Some students wanted to work on their own not in a group. Others questioned why they had to do certain activities that were not compulsory.

Unit was broken by March Break and teacher absence which made the unit appear longer to the students than it actually was.

General level students found the material too difficult.

Fairly positive reaction....depending upon the students' attitudes, not the unit. Some complained about the amount of work.

None of the students were negative; however, some did complain that there were too many assignments.

Not only were there no negative reactions, but the students didn't react to the extra workload required for the unit.

Students were positive.

Initially there was concern on the part of the students because the approach and the varied activities were new to them, but once they got involved they did very well and indeed the whole unit went very well.

Some students were more interested in the food than the French. One student refused to take part because he did not eat 'that food'.

Two grade 12 students in this grade 11 class found the activities to be too easy and too childish. They did not get involved.

Some students missed having the tangible evidence of "having notes for each lesson". Some felt the unit did not present any new concepts but just reinforced what was already known.

The unit did not seem to have the mental challenge to truly involve and motivate them.

Students appear to be indifferent to anything.

Any negativism had nothing to do with the unit or the methodology...it was endemic to the students.

As the students were used to this method of presentation, there was not a significantly different reaction. Some had difficulty listening to stories and needed visual reinforcement.

Group situations were sometimes difficult.

Some of the advanced level students did not like the group work and preferred the "old" methods.

Some students could not be reached with anything and some were ESL/D who could not cope.

The movie was a turn-off.

Students were used to the old approach and found the unit too much work for them.

No negative reactions by students (3).

No Response/Don't Know (3).

4. **What specific effects, if any, has your delivery of this 4MAT unit had on your students in the following areas:**

<u>Attitudes toward learning?</u>

While there were no major differences noted, some of the Type 2 learners "went along with the activities". The noise level was higher which may have bothered those students who prefer a more teacher centered approach.

Nothing really was observed re attitudes toward learning.

While the students' attitudes were positive, they did not appear to notice any difference between the way this unit was taught and any others.

Some students wanted to know their own learning styles.

The attitude of the students was positive and they were involved and/or interested (3).

Not sure of the impact, but the students were certainly interested and enjoyed the unit. Some of the students did not like the freedom of choice and the wide range of topics. Teacher was not sure why this was the case, but it did not seem to have a negative effect except that some students did not complete the last assignment.

The unit was fun and proved to be very successful....had a good impact on student self esteem.

Improved.

Very difficult to tell by normal testing and it is only through observation over a long time that the impact will be noticed.

Students produced good work and seemed interested.

Particularly in quadrant 4 the students seemed really interested, absorbed and wanted to do well. Projects were displayed and students received praise and recognition.

Students were positive (2).

Students were really keen on the projects and wanted to do the research. The teacher felt confident that the students could do something on their own.

O.K. (2)

Didn't notice any difference; minimal or no effect (4).

No Response/Don't Know (5).

Attendance

No difference noted...attendance patterns remained the same (15).

No change.....some did not come to the outdoor activity.

No difference as a result of 4MAT....poor attendance is a chronic problem in the school (2).

Could not tell any difference....attendance not a problem.

General level students had a poorer attendance record and advanced level had a slightly better record.

Compared to regular grade ten classes attendance was better; attendance improved or better than usual (3).

No Response (4).

Class Participation

Participation in group work was very good and participation in general was just as good if not better than usual.

More oral participation (3).

Better for all students.

Better and more frequent participation.

Students were very reluctant at the beginning, but it improved. By the time we got to the end, we had good discussion.

More participation especially by the more vocal students....the weaker students tended to be intimidated.

Yes....a very positive effect particularly during the small group discussions. Even the ones who would not normally say much got involved....these were the students who would not necessarily present to the whole group.

Good effect on group activities and on right-brained students.

The students were more actively involved.

There was good, enthusiastic participation.

Students always actively involved.

Students (even the shy ones) participated a lot more than usual. Very good discussions that benefited both the students and the teacher...everyone got to know each other better which led to a better teaching/learning environment.

There was lots of participation and more student involvement than usual.

There was more participation in dialogues...however, I forced them to do so.

Good involvement.

Students worked in groups and gave each other answers for purposes of expediency.

Greater participation than normal.

Everyone generally got involved either in groups or as an individual.

Students normally did not cooperate and they found it very difficult to work in groups, but in this unit the students got involved in the diary, the role playing and the group work. They seem to try harder when everyone was involved.

No changes noted; no effect (5).

No Response (1).

Achievement

The process of learning to put thoughts into writing proved to be very beneficial. The unit encouraged the development of their thoughts, lots of detail, written ideas and stating their opinions. As the unit progressed, they did much better in group discussion and in written expression.

More students were better....most do well anyway.

One student did particularly well on a project when he used pictures. I was generous in marks for projects for effort and good communication.

Advanced level students were not affected, but the general level students had difficulty with the material...not the methodology.

Same. Teacher expressed difficulty in evaluating when there was such a varied choice of evaluation techniques.

Teacher indicated that the students learned a lot from the unit and that the unit was particularly successful in achieving one objective probably due to the number of short assignments that were required.

Achievement was better as the evaluation was based on outcomes and mastery learning.

Extremely good.

Considerable overall class improvement.....8 to 10%.

The teacher commented on the greater interest and responsiveness of the students that resulted in excellent performance in the simulated interview. The resumes, however, were about the same calibre.

Yes...the students felt they were succeeding and they did well when drilled on vocabulary.

Appeared to be some improvement in facility with vocabulary.

Everyone achieved well....particularly if they did all the projects. The best results were in the dialogues which seemed to be particularly suited to their level.

Good quality and quantity in the written work. Written evaluations were used predominantly and this proved to be very efficient.

Seemed to be better because the assignments were completed; the students were motivated by the relevance of the material.

Improved.

As a group, they were improving....and more seemed to cope well as they got further into the unit.

5% higher than normal.

The students were "truly able to understand and personalize" the concepts. Their journal work, diaries and personal writing was excellent.

The "marginal" students did better than normal.

No difference overall....the process of learning was more fun, but grades remained the same.

No difference (3).

No Response (2).

Other (please specify)

Working with the book and the movie together was very beneficial.

Design and variety prevented boredom.

This unit seemed less formal....a different atmosphere. It could lead to discipline problems with a larger class.

This unit is better for general level. The tasks are more manageable and the feedback more immediate.

The students were more enthusiastic about the subejct.

Three quarters of the students chose to do a poster as the final project. Not only did they enjoy it, but they did it well....many have weak verbal skills and the project allowed them to draw. Teacher had not done this activity before and was pleased with the results.

Students empathized better in political situations.

Basically the groups worked well, but they ran into difficulty in problem solving, making decisions and reaching consensus.

No Response/Don't Know (19).

5. **We previously asked you to estimate how successful the 4MAT approach was for your students. If you feel that the 4MAT approach was not successful for a number of your students, why do you think that might be?**

The 4MAT approach was successful/very successful for most (2).

Overall...the unit was successful/very successful (3).

The 4MAT approach was relevant and successful for all.

A special education student mixed in with regular students found that he was unwanted in groups and, therefore, this unit was uncomfortable for him. The same student, however, like the project work.

The general level students found the vocabulary too difficult for reading and discussion, but they liked the film.

The 4MAT approach was more successful for everyone than other approaches. It was not successful for a few who have problems outside of school and attitudinal difficulties such that no approach would help.

The 4MAT approach was successful for the majority of the students. One activity was unacceptable to some of the students (dietary restrictions) and an alternative activity should be considered.

Some aspect of the 4MAT approach was successful for all students...except for those with poor attendance.

[Less successful for] Type 2 learners.

Some of the activities did not lend themselves to the brighter students who liked discussion (Type 1) and some activities did not lend themselves to the teacher (Type 4) who did not like student discussion.

Some of the ESL/D students found that the materials provided were not relevant to them.

Grade 10 General needs a lot of structure and this unit provided it...there were lots of illustrations to bring the students back to the main concepts.

The 4MAT approach was successful for most students....the topic had positive effect in spite of the fact that the class has several problems. Difficult to determine if the good results are because of 4MAT or the efforts of the teacher who has been working hard with these students.

The students who attended regularly and were interested certainly benefited. For those who attend sporadically and who were not interested in education there was no significant difference except that even those students seemed to enjoy it when they did attend.

Already answered in previous responses.

It was an exciting experience for the students.

No Response (8).

6. **What effect, if any, has your involvement with 4MAT had for you in terms of:**

<u>Your Perception of the Teaching/Learning Process</u>

Gave me a realization of the importance of quadrant 1 activities.

As a result of repeating the unit, it reinforced the belief of the teacher that all quadrants should be addressed in the learning process.

Has not changed a lot. Would like to read more about 4MAT and to find out if more oral work can be worked into the approach.

More aware of the different approaches that should be used at all levels.

Probably made the teacher more aware and provided an insight into the effect of some of the approaches she was already using. She now has a better understanding as to why those approaches work.

The teacher is now in tune with individual differences and this knowledge is beginning to influence the teaching of other courses.

Can now apply formal terminology to what has previously been used in the classroom.

The teacher is now more sensitive to the need for right brain activities and strategies.

Even more aware of the four learning styles.

To early to tell....the teacher wants an opportunity to learn more about 4MAT and to practise more applications.

The teacher's involvement in 4MAT has changed a lot. He hesitates to teach traditional lessons the way he used to. He now uses a variety of teaching methods and, therefore, decreases the boredom. He now accepts logical answers rather than just the one that he wants.

The 4MAT approach is good in terms of variety and looking at things in different ways. It also demonstrates a need for teachers to know what/why they are going to teach and for left/right brain activities. However, 4MAT has not been proved anywhere.

Before 4MAT, the teacher didn't usually teach quadrant 4 and not enough of quadrant 3. 4MAT seems to stress more active learning for students and now the teacher just acts as a facilitator for learning.

Has used 4MAT techniques before...not that different from what she has always done.

The teacher was always "enlightened".

None....the teacher liked 4MAT previously.

Teacher is now more aware of students' individual learning styles.

No profound difference.....however, it re-affirms the need for weaker students to have carefully planned, orderly teaching.

As a result of involvement in 4MAT, the teacher is more aware of how others deal with issues and of different learning and teaching styles. Now more aware of how colleagues deal with issues and why she was having a problem dealing with her principal.

More sensitive to different learning styles.

The teacher was already aware that kids learned differently, but 4MAT provides an organized way to meet the needs of the different learning styles. The teacher plans to use the 4MAT Model in other applications.

Group work has a positive effect on students. The teacher plans to analyse his teaching for more opportunities to use 4MAT methods.

4MAT reinforced the fact that students like hands-on activities. The 4MAT method enhanced the learning process. 4MAT is extremely successful with Grade 13 students.

4MAT makes the teacher more systematic about programming rather than teaching intuitively.

4MAT is a refreshing approach to teaching. Teacher has been able to involve the students more as a result of introducing 4MAT and has learned more about the students' level of understanding. Able to evaluate at any time during the process.

No Response (2).

Your Attitude Towards the Learner

No effect (3).

No change....always receptive to students.

No appreciable difference.

Teacher was already sensitive to the different needs of students (2).

More aware of different learning styles.

Makes the teacher more aware of talents of the learners not usually evident in traditional teaching methods....acting, drawing, etc.

Students learn differently and I am now more sensitive to this.

The teacher now has an insight into individual differences among students.

The teacher indicated that he was "happy to see kids involved".

The teacher established "more reasonable expectations for the students" and referred to the many evaluations that seemed to assist in this process.

Teacher got to know students better as there was more interaction.

Teacher now thinks about the concepts of the 4MAT Model and tries to think of different ways to approach teaching especially when she is working with individual students....trying to find other ways to reach them.

The teacher is more accepting of students as they are. If a student is experiencing difficulty, the teacher is more patient and understanding....they "won't even see things the way I do".

The teacher was always "enlightened".

Students are capable of 'higher order thinking' if material is interesting and they want to discuss it.

The teacher now thinks in terms of the learner and, as a result of her involvement in 4MAT, she is changing her teaching in other courses.

The teacher is more respectful and tolerant of different learning styles.....4MAT has been very informative in revealing individuality.

Teacher gained respect for the abilities of his students as a result of the four quadrant activities and is now more sensitive to various strengths and weaknesses.

Teacher is now sensitive as to why poor students do not respond to traditional teaching.

4MAT is a great learning aid...kids listen well. No new insights for the teacher.

To some extent, the teacher was able to see students in a different light.

No Response (3).

Your Classroom Routine/Environment

No major differences; no change; no appreciable change (4).

Not much....but more group and oral work.

The teacher indicated a need for more grammar review at the end of the unit.....grammar missing from the unit.

More exhausting....requires more organization.

No particular impact was noticed since most of the unit was similar to how the material would have been taught anyway.

The teacher has introduced more student-centred activities.

More variety.

Activities more related to student needs.

Less structured....a pleasant environment.

No particular impact on classroom routine or environment yet.

The teacher now uses a lot of variety in routine and different ways of reinforcing the same structures.

The teacher tried to follow the instructions of the unit and held to the time allocated for each activity.

Environment now looser and messier....but creative.

Perhaps more structured due to time limits....which the students seemed to like as they knew what to expect.

About the same....just the content was different.

The teacher is now more oriented to different techniques and, as a result of her involvement in 4MAT, it has now become a natural part of her teaching.

More activity causing confusion....students need to be trained to work in this environment.

More group work.

No....all the techniques recommended in the unit have been used before in part.

Teacher now handles the students differently....more aware of the kinds of activities that the students might be interested in and able to do.

Less work for the teacher...easier to teach because there is less preparation.

No Response (3).

Discussions with Other Teachers?

No effect on discussion (3).

Only with Department Head. No other teacher has done a 4MAT UNIT.

With one other teacher.

No other teachers are doing the unit, and when it was mentioned, no others were interested.

Discussed the unit with another teacher who was also on the research study; only discussed it with another teacher attempting the unit (4).

Other teachers have had an awareness workshop and are aware that the teacher is involved in the research project. Only the Department Head has indicated any interest in the unit, however, and then to indicate that in many ways it is similar to the way it is always done.

Teacher reports a lack of receptivity except for the Department Head.

Constantly engaged in peer coaching which takes a lot of time.

Although a few teachers have had workshops on 4MAT the teacher is not aware of any staff conversations on the topic....she does not go to the staff room.

Discussed with another teacher who was attempting to implement the same unit at the same time. No discussions with any other teachers.

Discussed with Department Head and with other teachers who were involved in the 4MAT workshops....but not about this unit.

Just to vent frustrations about physical difficulties of having to carry a set of papers around to the classroom.

There was reluctance on the part of others to discuss.

No opportunities to discuss with other teachers.

Yes, as a department head, knowledge of 4MAT was used in planning meetings and selecting activities.

Discussed with Department Head...but no time to discuss with other teachers.

Teacher received a negative response from other teachers...no others involved.

A few years ago there was some talk among the staff, but not much is heard about it now. Teacher is aware that a few other teachers on staff are in the study.

Yes...presented the unit to other staff members as a positive approach. Others might use it.

No Response (3).

Other? (please specify)

There is a need for quadrant 1 activities for other units.

The administration was impressed by the 4MAT unit that was taught last year.

Teacher would like to design her own 4MAT units.

The teacher's involvement confirmed her previous assessment of the 4MAT approach...how to teach and the need to respond to individual learning differences. She has changed her approach to teaching and to dealing with her colleagues...4MAT helped her to formalize what was previously a 'gut feeling'.

No Response (23).

Any additional comments you'd like to make?

Note: Many of the comments in this section were suggestions to the author(s) of the unit for changes, additions or deletions to the content, strategies or resources. These items have not been included in this report but have been passed on to the authors to consider in their revisions to the units of study.

The teacher indicated that she had participated in the development of some units of study.

A lot of good material was contained in the unit especially topics for projects and discussion.

Teacher commented that it was interesting to do this project and she will use the ideas she has learned....but not with the amount of time.

Suggestions for the authors (3).

All the evaluation procedures were used plus an additional summative test at the end.

This is a valid approach that should be extended. It has good support in its concept from OS:IS.

Teacher commented that her involvement in the project gave a "formal name" to the technique she has been using during the last couple of years.

A very creative way of teaching. Less work for the teacher and, therefore, more student involvement. Some suggestions for the authors and the thought that a follow-up evaluation of retention should be attempted.

Teacher would like to try the unit with another class and compare the results. She feels that her class this year was particularly reticent and suffered from poor attendance.

Would teach the unit again but with modifications. Suggestions offered.

Teacher has great faith in the 4MAT theory and has many suggestions for revisions to the unit.

While supportive, this teacher indicates that 4MAT is not the sole answer to improved teaching/learning environments. Suggestions for change offered.

The 4MAT method can help to remedy two of the teacher's main concerns...student lack of proficiency in language/vocabulary and student lack of awareness of how others manipulate them through language.

Teacher expressed some concerns about teachers attempting to implement a 4MAT unit without training in the 4MAT system. It is her opinion that more people should have been involved in the project (at least one from each school in each subject discipline) and that as a result they would all have the opportunity to learn something about this approach to teaching/learning. The visual approach in history is particularly important.

If there was a team of teachers formed to develop more units, this teacher would be interested.

The teacher certainly enjoyed teaching the 4MAT unit. It proved to be a wonderful experience and she will teach it again and it has given her fresh ideas for teaching other units.

Teacher is not sure that 4MAT would be effective with Grade 13 students (university bound students). The teacher likes the idea of 4MAT teaching and will use other prepared units and sees real value for grades 9 to 12.

Teacher plans to continue to use 4MAT but will not use it exclusively ...the novelty of the approach is an important feature. Some suggestions re content and resources.

Teacher reaction to the unit is very positive. Teacher might have sketched out such a unit but never to the extent that this unit has been prepared. It is very helpful to have this kind of unit provided.

Generally positive.

No Response (5).

SUMMARY OF STUDENT'S RESPONSES TO OPEN-ENDED QUESTIONS

#3. COMMENTS BY THOSE WHO NOTICED DIFFERENCES IN THE WAY THIS UNIT WAS TAUGHT FROM THE USUAL METHOD USED BY THEIR TEACHER. (N=287) **%**

1. **More group work, discussion, participation and oral presentations** 29

   - more class involvement; more eager to communicate

2. **Differences or greater variety in way teacher presents material** 19

   - e.g. teacher writes more; less lecturing; we don't have to get up in front of class; more audio visual or graphic aids

3. **Different types of or more variety in projects and assignments** 17

   - more practical and applied work (e.g., fieldtrips, experiments, acting, dialogues); less notetaking
   - drawing pictures; doing projects; less memorizing; less written work or reading

4. **More interesting, enjoyable and fun; less boring; more relevance, practicality, worth or value** 16

5. **Increased understanding, learned more than in past or got more help** 15

   - involves different ways of thinking; makes you remember better
   - teachers provided more help
   - better understanding due to greater depth
   - better ways of explaining, or better organizing; more practice practice

6. **Students more responsible for their work** 15

   - students do more research or more of the work and/or have more choice
   - more self motivation, thinking or personal opinion involved
   - more independent projects; students teach each other;

7. **Comments about difficulty or time required for unit** 12

   - easier unit, finished faster, less stressful, or less work (5%)
   - too much time, detail or work; slower pace or stayed on subject for a long time (7%)

8. **Other comments** 13

   - comments about content of unit (2%)
   - other positive or neutral comments (7%)
   - other negative comments (4%)

9. **No comments** 7

#4 a) WHAT DID YOU LIKE BEST ABOUT THE UNIT AND WHY? **%***

1. More group work, discussion and participation; oral presentations **25**

- improved class cooperation; more of students involved
- oral work and discussions let us use our skills, was fun to do, and I learned at the same time
- freer communication; able to express self; enjoyed the oral presentation;
- group work helped expose us to different ways of thinking, and we helped each other learn

2. More variety in student projects and assignments; specific comments about student assignments, projects and evaluation **19**

- had interesting topics; posters, drawing, writing, fill in blanks; project was interesting and we learned a lot; variety and choice of project (e.g., cartoon, game board, writing story or diary, making our own newspaper; experiments, labwork and fieldtrips)
- the research was fun; easier tests

3. More relevance, practicality, worth or value **12**

- learned something that is useful now or in future;
- learned practical skills (e.g., order food in French, eat properly and plan proper diet, calories, nutrition needs and what foods contain; resumes, application letters or what job interviews are like
- presentations give you training for future speeches

4. Greater variety in way material is presented by teacher; specific comments on method, procedure, or presentation to students **11**

- lots of interesting or fun movies, videos and activities (which helped us understand)
- material well organized or presented in a variety of ways; wide range of topics discussed;
- segmentized and thus it was easier to understand;
- concentration on vocabulary, dictation or reading aloud; flash cards; reading dialogues

5. Comments about content of unit **11**

- the topic of story, e.g., the Blue Kimono;
- stock market crash; learning about the 30's; how people grew up and what they went through; liked learning about rights of workers
- liked the way the newspaper worked
- vocabulary in stories and dictation

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* Percentages are based on the total sample of 572 students.

		%
6.	**Students more responsible for their work; greater opportunities to show creativity and imagination** - I liked teaching classmates - more freedom; more motivation to keep involved and/or try harder - independent study; liked choosing the information myself - able to expand our ideas; choose original project ideas, be creative and show our interpretations	8
7.	**More interesting and enjoyable; more fun; less boring**	8
8.	**Comments about difficulty, amount of work or time** - easier unit and finished faster - decrease in written work, homework and exams	5
9.	**Other comments (positive)** - increased understanding, learned more than in past or got more help (4%) - liked everything (1%) - very different from other classes; learned more by steps; change from usual method (1%) - miscellaneous remarks (2%)	8
10.	**No response** (12%) - liked nothing (3%)	15

#4. b) WHAT DID YOU DISLIKE ABOUT THIS UNIT:	% *
1. **Liked everything**	25
2. **Comments on student assignments, projects and evaluation**	14
- disliked analysing everything; needed better topics - disliked watching film, reading and answering questions, or reading aloud - disliked the research project; the test, diary, poster, handouts, oral presentations, dictation, labs, comprehension test, or handing in notes	
3. **Boring, easy, took too long or was repetitive**	10
- because I knew it already; we did not get to start new topics; it took longer than usual to cover the material - not enough homework	
4. **Increase written work, homework and tests**	9
- too much homework, too many labs, projects and assignments; too much work for the time allowed - more thinking to do; too much writing	
5. **Disliked playacting, discussion was poor, or disliked working in groups**	8
- interpersonal problems in groups; prefer to work on own - hard to coordinate work between 3 or 4 people - nervous doing presentations; too much talking; many students can't teach	
6. **Comments about content of the unit**	7
- dislike topic of story or reading newspapers; need something more exciting or interesting - I didn't like how people couldn't get any food or a decent place to live; how government laid off workers just because they were losing business; topic or unit itself; - French dictation and vocabulary; need stronger emphasis on new words and vocabulary to understand story	
7. **Comments on method, procedure or presentation to students; poorly organized or not enough time**	6
- story too long to remember; reading the story and studying it - films were boring; audio visual aids; too much writing from the board - didn't get enough help or explanation - too rushed, needed more time for project or for whole unit - couldn't find necessary research materials	

* Percentages are based on the total sample of 572 students.

		%
8.	**Other comments (negative)**	5
	- prefer the usual method - problems with the teacher or with other students - didn't learn as much as with usual method; lower marks; harder to concentrate	
9.	**No response**	22

EXAMPLES OF STUDENTS' ADDITIONAL COMMENTS

Positive Comments

I learned quite a bit in a short period of time ... [it's] well organized.

All topics and subjects should be taught in this manner.

[I like the approach because otherwise] a lot of people have a lot of brains and don't use them to their fullest because some information doesn't sink in right.

Involvement through presentations is important. It's more effective when you perform than just watch and listen.

I find I'm learning more with The Newspaper because it's starting to help my writing.

If all teachers taught this way students and teachers would have a better relationship.

I think we should use the method more often. It gets people communicating more and learning how to work together better.

It opened my eyes to things that are happening around us and it gets us involved.

I think this method is good. We did things exactly as if we were in that situation. I'm sure that this method would help students learn and remember more of what is taught.

The mock interviews were a very good idea.

I think this system is better because everyone can do what they want and how they want to do it.

It was fun, informative and I actually learned something.

It was very foggy ... but I think I learned more oral. Being immersed in total French for a class while talking in dialogues and with friends helps us piece together the total French picture more.

Suggestions/Qualified Positive Comments

It would be more effective if we could have the original groups. [When you pick a different group] you lose interest [and] can't work as good. I disagree with the mark evaluation. I enjoyed the independent periods. It gave us lots of time to get ahead.

I would have enjoyed it more if there was a little life-like characteristics put into it.

If there was more time and less talking it probably would have been more fun.

This class was good but ... I think it should be an option whether or not students learn [by] this system.

More work should be done individually because some people are unable to work in groups.

I liked the class but there was too much work considering the mark value of each. The marking should be more distributed.

We spent too much time on a story that doesn't mean anything. 4MAT should be used on a bigger and more interesting topic, such as French culture.

The different ways of teaching were helpful but at this time of year ... it's hard to keep up with all the additional work.

Some days it seemed we were being taught differently while other days it didn't. It was a good unit and I think we all had fun.

For slow learners I feel this method should be used for all subjects.

4MAT should be used with enriched students.

The Board should experiment with this method in different subjects in an earlier grade so the students can develop their various skills right from the beginning. It's a great learning experience.

The unit should include more small quizzes and written work.

It was fun but [more time should be spent on] typing.

I enjoyed the 4MAT way but some material was unobtainable.

This unit was very well handled. In future I suggest you put more visual aspects of it on.

This method is okay but there is too much emphasis on oral and I like written work a little more.

Negative Comments

I feel cheated that I was involuntarily used as a "specimen" in an experiment with a subject where my marks are involved.

Just one way of teaching is best - straight knowledge from teacher to students.

The Board should take a serious look into this program because I think it's a waste of time.

I didn't feel it was grade 11 - it was more like grade 5.

I like the usual way of teaching - teacher talks and students write what he says. I hate working in groups because I always get stuck with the majority of the work and they get credit for it.

Let the teacher teach the class - that's what they get paid for.

The tests were too complex.

Do not stay on one topic so long.

It was very difficult compared to the level of French we are at.

I think I would do better with the usual way of teaching.

If we are going to do this we should do it on today's topic. This way we [would] have to learn language which we can use to speak with someone our own age, not a 10 year old.

Too many minute details must be remembered.

What's the point? It's the teachers who have to teach and these new methods ... won't help if the people who teach us are not under constant supervision. It won't work as well as expected.